PROGRESS REPORT ON
THE DEPARTMENT'S REVIEW OF THE MINE PROPOSED BY THE CRANDON MINING COMPANY: May 1997

Department of Natural Resources
Box 7921, Madison, WI 53707
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Introduction: We begin this progress report with a focus on new items of interest and then provide more basic information relating to the proposed project and mining regulation for our new readers.

It has been a little over three years since the company filed its first documents and we started our regulatory review of their mining proposal. Since our previous status report last fall, the Department's staff and consultants have continued to review the Environmental Impact Report, permit applications, technical support documents, and other data provided by the Crandon Mining Company. We are also preparing our draft Environmental Impact Statement on the proposed mine. As expected, progress is slow in some areas. We want to be certain to completely evaluate the technical studies provided to us and consider all of the possible environmental impacts should the project be permitted and built. The final written decision on the mining permit will not be made for at least two years or longer, and will be based on the record developed during the final hearing process. (We intend to discuss the final hearing process in detail in a future report.)

WHAT'S NEW?

Public Meeting Schedule: Recently, the Department released its schedule for holding a series of public meetings on the proposed Crandon Mine. Public meetings already have been held in New London (on the Wolf River) and the Town of Ainsworth in Langlade County (adjacent to the project site) in April. Additional meetings between Department staff and the public will be in the Crandon area on May 14 and in Wausau on May 28, in Tomahawk on June 18 and in Green Bay on June 19. We will hold a final meeting in Rhinelander, but it has not yet been scheduled. Contacts also have been made with tribal authorities to schedule a meeting with them.

The purpose of the public meetings is to discuss our progress and future schedule in reviewing the mining proposal, explain our regulatory authority over mining projects, and listen and respond to the concerns of the public and tribal members. The Department staff will tape the meetings and will write and distribute a meeting summary containing staff responses to public questions after each meeting.

Wisconsin River BOD Modeling: BOD stands for biochemical oxygen demand. This is a measure of the amount of oxygen needed in the biological processes to break down organic matter or chemicals in water. The greater the degree of pollution by organic matter, the higher the BOD. As the amount of BOD in aquatic habitats increases, the availability of oxygen for aquatic life decreases. BOD may enter the river from non-point sources, such as agriculture or urban runoff, or from discharges into the river via permitted point sources such as industries and municipal

wastewater treatment plants.

The Department regulates BOD in the river by limiting how much each industry or municipality can discharge to each segment of the river after establishing a ceiling on BOD discharges for each segment of the river. If too much organic material reaches the river, the dissolved oxygen in the river could fall below 5 parts per million. The Department's standard for dissolved oxygen in rivers is a minimum of 5 parts per million to support a balanced aquatic community of fish and aquatic life. Low levels of dissolved oxygen can cause problems for fish and aquatic life.

Segment A of the Wisconsin River, between Rhinelander and Grandmother Dam south of Tomahawk, is the discharge site preferred by the Crandon Mining Company. Several municipalities and industries discharge into this segment of the river. During summer months, however, occasionally the dissolved oxygen in the river falls below 5 parts per million. In other words, Segment A was "over-allocated" for BOD. The Department recently announced that it could not consider allowing a new source, such as the proposed Crandon discharge, if it would result in detectable amounts of BOD discharged into Segment A. Before a new source could be permitted, the BOD problem in the river would have to be remedied.

In order to reduce the amount of BOD that is discharged to Segment A of the Wisconsin River, the Department first will update its dissolved oxygen model for the segment. The model will help us to determine how much BOD reduction is needed to maintain the dissolved oxygen standard in the River. To reduce the amount of BOD that can be discharged from each industry and municipality, the Department will work with the public, current dischargers, and the Crandon Mining Company, if it chooses to participate, to develop a solution. Non-point sources of BOD will also be considered. Depending on the location and amount of their discharge, the amount of discharge permitted may be reduced for some dischargers. This discharge allocation process, including the dissolved oxygen modeling, could take several years to complete.

Groundwater Modeling Update: The Department, with the assistance of consultants, is continuing its review of the groundwater flow model submitted by the mining company in August 1996. A flow model is intended to help us to understand the direction and rate of groundwater movement and the interaction between groundwater and the surface waters in lakes, streams, wetlands and springs. We are carefully looking at the construction of the model, the model inputs, and the computation/numerical issues to make sure that the submitted model is an accurate representation of the natural system in the area of the mine. In January, we provided a comment letter to the mining company asking for additional information and clarification on many aspects of the flow model. We are evaluating the company's responses and anticipate providing another comment letter on similar issues in the near future. Once we are confident that we have an acceptable flow model, we will review the impact conclusions made by the mining company based on the flow modeling results.

The company submitted a revised solute (liquid contaminant) transport modeling report in November 1996. The transport model is designed to help us evaluate the impacts of potential

contaminants that would leak from the waste disposal facility and the abandoned underground mine. Since the solute transport modeling is based on the flow model, we have not fully reviewed the transport model. Once we determine that we have an acceptable flow model, then we will begin our detailed review of the solute transport model.

Crown Pillar Hydrology: The crown pillar is the zone of bedrock at the top of the ore body, just beneath the glacial deposits, that would be left in place for stability and to prevent collapse of the adjacent underground workings. The mining company submitted a report dated May 1996 assessing how much water moves through tiny cracks in the crown pillar. Our mining engineering consultant recently completed his review of the report. He concluded that the assumptions used in the computer modeling of the rock stresses were questionable. Changes in rock stresses could change the amount of water moving through the crown pillar. In February, we forwarded those comments to the mining company with a letter requesting they revise the analysis using more reasonable assumptions and a different method of analysis. The company agreed to perform the analysis again based on our consultant's comments.

Inter-basin Transfer of Water: If the proposed surface water discharge to the Wisconsin River were approved, there would be an inter-basin transfer of water from the Great Lakes basin to the Mississippi River basin. State law concerning inter-basin transfers is contained in section 281.35 (144.026 old numbering system), Wisconsin Statutes. Chapter NR 142, (*Wisconsin Water Management and Conservation*, Wis. Admin. Code), addresses in further detail how the Department regulates withdrawals from waters of the State.

The State statutes identify three levels of water withdrawal and the approval process and information requirements necessary for each. If the withdrawal would average more than 100,000 gallons per day, an applicant must register the proposed withdrawal with the Department and report the rate and volume of withdrawal. For a withdrawal that would average greater than 2,000,000 gallons per day, an applicant must apply for a permit and provide additional information. The governors of the Great Lakes States and the premiers of the Canadian Provinces bordering the Great Lakes must be consulted if the withdrawal would average more than 5,000,000 gallons per day.

Our preliminary calculation on the amount of water loss from the inter-basin transfer is less than the two million gallons per day threshold, thus the Crandon Mining Company needs only to register the withdrawal with the Department and report the volume and rate of withdrawal.

The 1986 Water Resources Development Act passed by the U.S. Congress refers to **diversions** of water from the Great Lakes or its tributaries, but does not include groundwater diversions or withdrawal. For this reason, our interpretation of the 1986 federal law is that it does not apply to the proposed mine.

Proposed Mining Rule Revisions: Proposed revisions to Chapter NR 132 (*Metallic Mineral Mining*, Wis. Admin. Code), would require a mining permit holder to establish an irrevocable trust fund to guarantee the availability of funds for necessary remedial actions. The proposed rule

specifies appropriate uses of the fund and the mechanisms by which the fund is established, reviewed, and adjusted.

Proposed revisions to Chapter NR 182 (*Metallic Mining Wastes*, Wis. Admin. Code), would impose the groundwater quality provisions of Chapter NR 140 (*Groundwater Quality*, Wis. Admin. Code), to mining sites. Facilities on mining sites would be required to be designed and operated to achieve compliance with all the provisions specified in Chapter NR 140 (Wis. Admin. Code). Several key elements from the existing Chapter NR 182 (Wis. Admin. Code), which will supplement the provisions of Chapter NR 140 (Wis. Admin. Code), are proposed to be retained. These include provisions that require predictive modeling prior to project approval, preparation of a contingency plan on how to react to unforeseen impacts, and assessment of any statistically significant deviation from baseline groundwater quality detected during project monitoring.

The Natural Resources Board has authorized five public hearings on the proposed revisions to the mining rules. Hearings will be held in Eau Claire on May 19, Rhinelander on May 20, Shawano on May 21, Milwaukee on May 23, and in Madison on May 30.

IMPORTANT PROJECT AND REGULATORY INFORMATION

Description of the Proposed Mining Project: The Crandon Mining Company has proposed construction of a large industrial facility to mine zinc, copper and lead, along with silver and gold, from a deep underground mine. In addition to the mine, there would be ore concentrating facilities, an above-ground waste (tailings) disposal facility, a water treatment plant, a buried pipeline to the Wisconsin River for discharging treated wastewater, and additional facilities. In total, the project would directly affect nearly 600 acres at the proposed project site, seven miles south of Crandon. There are no smelting or refining facilities in Wisconsin, thus the zinc, copper, and lead concentrates produced at the facility would be transported by rail to other states or countries for further processing.

The project proposal is to mine about 55 million tons of ore over approximately 28 years of operation. Construction would require about three years, and reclamation of the site would take an additional four years after mining ended.

During development of the underground passageways and ore removal, groundwater would seep into the mine and have to be pumped out. The continuous mine pumping would lower the groundwater levels around the mine and could affect the levels of local lakes and streams. The mining company, under the Department's review and approval, would be responsible for implementing a surface water mitigation plan for the project that would assure protection of the public rights (e.g., boating, fishing, swimming, protection of aquatic and wildlife habitat) in those surface waters.

Mining Waste Disposal: Mining wastes include the finely ground tailings (the waste left after

the valuable minerals are removed), waste rock, and water treatment plant solids, which are proposed for permanent disposal in the tailings management area. In total, nearly 24 million tons of waste would be placed in the facility and a nearly equal amount would be backfilled in the underground mine. The tailings management area would consist of four cells, each between 45-71 acres in size, and each with a multiple liner system on the bottom and sides to minimize leakage to the groundwater. A leachate (liquid) collection system on the bottom and the sides (just above the liner) also would help minimize liquid loss through the liner. The waste disposal cells would be filled and reclaimed sequentially as mining proceeded. The multiple liner system would incorporate compacted native soil, a manufactured bentonite clay layer and a flexible plastic membrane. A reclamation cap consisting of the same soil, bentonite and plastic membrane components, plus a drainage layer, would cover each cell after closure to minimize the amounts of water and oxygen reaching the wastes. The reclamation goal, through the use of the reclamation cap, is to limit over the long term the amount of water and oxygen reaching the wastes in order to reduce pollutants reaching the groundwater.

Permits Needed: The major State permits, approvals, and licenses required for the proposed mine are listed below:

- Mining Permit - includes the mining plan, environmental monitoring plan, the reclamation plan, risk assessment and contingency plan;
- Tailings Management Feasibility Determination, Plan of Operation Approval, and Solid Waste Operating License;
- Air Quality Permit;
- Surface Water Discharge (WPDES) Permit (proposed for Wisconsin River);
- High-capacity Well Plan Approval (for mine pumping);
- Wastewater Treatment Plant Plan Approval;
- Industrial Storm-water Runoff Permit (for construction);
- Chapter 30 (Navigable Waters) Permits - for stream crossings and discharge structures (if needed);
- Withdrawal of County Forest Land;
- Potable Water Supply Plan Approval;
- Additional permits and approvals may be required for the surface water mitigation plan, designed to maintain lake levels and stream flows that could be affected by the mine pumping. The plan has not been fully developed.
- Approval by the Public Service Commission for the electric transmission line and natural gas pipeline to serve the project.

The local units of government in the project area that have zoning and land use regulatory authority for the proposed mine must issue approvals before the Department could issue a mining permit. Two local units of government, the Town of Nashville and Forest County, have signed local agreements implementing local approval.

The **US Army Corps of Engineers** is preparing a Federal Environmental Impact Statement on the proposal and has permitting authority for the proposed wetland dredging and filling. The Corps also has a responsibility to protect the resources on Native American lands. In addition, the Army Corps requires wetland mitigation to compensate for the wetlands that would be lost on the project site during development. To comply with that requirement, the Crandon Mining Company has proposed to re-establish wetlands on drained agricultural lands located on the Shawano and Oconto County border.

Significant Environmental Concerns: The following list includes the most significant environmental concerns associated with the proposed project that have been identified by the public. These issues, along with many more, will be fully evaluated in our Environmental Impact Statement:

- The potential for "acid rock" drainage from the mining wastes and mobilization of heavy metals in the acid leachate
- Groundwater contamination as the result of acid rock drainage from the mine or tailings disposal facility
- Destruction (during the life of the project) of nearly 600 acres of habitat plus additional acreage of secondary impacts
- Inter-basin transfer of water from the Great Lakes basin to the Mississippi basin
- Surface water impacts to the Wolf River and its tributaries, as well as to the Wisconsin River
- Groundwater drawdown due to mine pumping and resulting surface water and water well impacts
- Impacts to the adjacent Sokaogon Chippewa Reservation, including Rice Lake and its wild rice crop
- Impacts of mercury in groundwater and surface waters
- Social and economic changes to the project area
- Construction and tailings area fugitive dust
- Impacts of particulate deposition on soils, lakes, streams, and nearby residences
- Regional tourism impacts
- Noise impacts
- Potential chemical or concentrate spills

Mining Information Sheets: The Department's mining information sheets recently have been updated. These updated information sheets are available from Department offices in Rhinelander and Madison. These are prepared by the Department of Natural Resources to explain how mining in Wisconsin is regulated and to explore other aspects of metallic mining. Copies of the following nine mining information sheets are available:

- Potential Mining Development in Northern Wisconsin
- Cumulative Impacts of Mining Development in Northern Wisconsin
- How a Mine is Permitted

- Protecting Groundwater at Mining Sites
- Local Decisions in Mining Projects
- Wisconsin's Net Proceeds Tax on Mining and Distribution of Funds to Municipalities
- Reclamation and Long-Term Care Requirements for Mine Sites in Wisconsin
- Responses to Public Concerns with Wisconsin's Laws Governing Mining
- How the Department of Natural Resources Regulates Mining

We also have copies of "Public Concerns Regarding the Proposed Crandon Mine Discharge into the Wisconsin River." This is a compilation of citizen questions and Department responses from a May 1996 public meeting in Tomahawk.

The most comprehensive explanation of mining regulation is found in *An Overview of Metallic Mineral Regulation in Wisconsin* by Thomas Evans. It was published as Special Report 13 (revised in 1996) by the Wisconsin Geological & Natural History Survey, Madison, and can be ordered by calling (608) 263-7839.

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